

Remarks/Arguments

In the Office Action mailed December 18, 2003, the disclosure was objected to for not including headings. Appropriate headings have been proposed for insertion into the Specification in the **Amendment to the Specification** section on page 2 of this paper.

Claims 1-25 remain in the application. Claim 8 has been amended to remove the reference numbers (41, 42). Claims 22 and 23 have been amended to properly depend on claim 18. In addition, reference numerals have been removed from the independent claims in accordance with U.S. practice. Accordingly, it is believed that the outstanding objections to the claims have been rendered moot, and no new matter has been entered.

In the Office Action mailed December 18, 2003, claim 1, 2, 5, 18 and 19 were rejected under 35 U.S.C. 102(b) as being anticipated by Maus, et al. (United States Patent No. 4,828,769). In addition, in the Office Action mailed December 18, 2003, claims 3, 4, 6-17, 20 and 21-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maus, et al. ('769), over Hepler (United States Patent No. 5,334,006).

The present invention discloses the use of interchangeable gate design mold members which function to allow the adjustment of polymer flow fronts emanating from the gates in order that multiple colors having pigments used to modify light reflectivity (formulations) can be injection molded without surface defects yet not require major mold modifications between colors. Filled polymer compositions, particularly those containing various types of flat particles or flakes such as light reflective pigments as colorants are popular today to create a unique appearance as well as to eliminate the need for painting. The rheological characteristics of these polymer compositions vary widely

from color to color, particularly in automobile applications, due to the physical nature of these colorants. However, it is not cost effective to have separate molds or even to modify to a mold to optimize the processing characteristics for each color.

According to this invention, the entry points for polymer to the mold can now be built to accommodate interchangeable mold members or gate inserts, which may either be open or closed or partially limit polymer melt flow into a specific area of a mold, thus allowing polymer flow fronts to be adjusted. This results in less visible weld lines, swirls and flow patterns of the filled polymer such that products having acceptable surface appearance can be produced. In this manner, when a color change is accomplished on a molding machine, only minor changes in rapid fashion need be made to the mold (interchanging gate inserts).

Or, in other words, by providing a mold with a "first gate design" and a "second gate design", one can selectively control the filling pattern for the mold, by adjusting, for example, the openings on the respective gates. This versatility in the mold avoids the need to change the entire mold should one desire to shift the filling pattern of the mold, economically, and without significant retooling and down time.

Thus, an important aspect of the present invention is to provide such interchangeable gate inserts primarily designed to service a single cavity mold, to allow the adjustment of polymer flow fronts to improve the aesthetics of metallic appearing plastic molded articles.

In United States Patent No. 4,828,769 to Maus, the objective is to adjust mold cavity volume (cavity enlargement system 104) via die inserts 5a and "resilient

members” (springs and cylinders) 13. The die inserts comprise and define the actual mold cavity. See, e.g., item **5a** in FIG. 10a. They do not amount to an interchangeable gate. In that regard, Applicants respectfully disagree with the Examiner’s citation to col. 28, lines 35-38 of Maus as disclosing an interchangeable gate. This section of Maus refers to the die insert **5a**, which as noted above, defines the mold cavity, and is not a gate.

Maus does disclose flow restrictive members **4** which extend into the runner system **3** “to ensure that each mold cavity receives the appropriate amount of melt” (see col. 21 lines 66-67 of (‘769). The flow restrictive members are not gates, and are not interchangeable with respect to the mold.

In column 29, lines 40-50 of United States Patent No. 4,828,769, Maus notes that with respect to his multi-cavity mold, the use of different gate sections would only serve to balance the filling pattern into each respective mold cavity. Maus then actually states that the use of different gate section for regulating flow into each respective mold cavity is disadvantageous, and he goes on to teach against their use, and his preference for the flow restrictive members 4a and 4b discussed above. The above being the case, it is worth noting that claim 1 herein recites the use of a first gate and second gate design for a single mold cavity, unlike Maus, who teaches against their use altogether as applied to feeding a multi-cavity mold design.

Thus, Maus recites the use of interchangeable **die inserts** and adjustable flow restrictive members to **balance mass** and volume difference in **multicavity** tooling. In contrast, the present invention discloses the use of a first and second interchangeable **gate**

insert for feeding into a mold cavity to adjust polymer flow fronts in said cavity to minimize **aesthetic** (surface) **defects** (i.e. modify light reflectivity of the pigment additive). Such feature is simply not disclosed or suggested by the primary reference of Maus.

Before leaving Maus, a few additional remarks are in order. The Examiner at page 3 of the Office Action mailed December 18, 2003, at item 6, states that Maus teaches a method and apparatus of molding plastic articles in an injection mold, where the gates are interchangeable and it is (the) intended use of changing the gates for different gates **for color** rather than the prior art use for flow control (emphasis added).

As noted above, it is respectfully submitted that Maus does not disclose or suggest interchangeable gates for a single cavity mold, and at best, Maus disparages their use when it comes to fill-out of a multi-cavity mold, should one even consider the use of such gating to balance the filling pattern within each of the two cavities. Furthermore, it is not entirely clear to Applicants what the Examiner is getting at with the reference of the intended use of the gates for color. Presumably, the Examiner was making the point that an intended use of an apparatus claim, which reads on the prior art, is not sufficient to distinguish an invention from the art. To this, Applicants do not argue. However, as noted, the apparatus of the present invention is different from Maus in its construction and as claimed, so that issues of intended use have not been argued, and are not relied upon by the Applicants in regards to distinguishing claim 1 herein.

The Examiner admits in item 6 that "Maus fails to teach an edge gate design, gate design removably attachable to the first or second mold member by threaded fasteners,

Appln. No. 10/089,558
Amndt. dated March 17, 2004
Reply to Office Action of December 18, 2003

having at least two interchangeable mold members for the gate designs, and the plastic materials of a certain pigment or polymer". Thus, the present invention clearly distinguishes over the cited art which are directed at a cavity enlargement system (Maus '769) and a hot sprue bushing for controlling melt temperature (Hepler '006 as discussed more fully below). In that regard, attention is directed at dependent claims 3-4 which recite the feature of an edge gate, and on that note, Applicants agree that the principal reference of Maus as well as the secondary reference of Hepler which are not directed at interchangeable edge gate designs.

Hepler, in United States Patent No. 5,334,006, discloses a heated sprue brushing having an interchangeable tip with multiple edge gates for "controlling the temperature of the plasticized material as it is conveyed through the stationary plate or plates of an injection mold from the nozzle to the cavity gate(s)". (Column 3, lines 42-45). Again the focus here is on multicavity applications (column 5, line 5). The sprue brushing is part of the injection portion of the molding machine, and not part of the mold.

In consideration of the amendments to the claims and the remarks hereinabove, Applicant respectfully submits that all claims currently pending in the application are believed to be in condition for examination. Allowance at an early date is respectfully solicited.

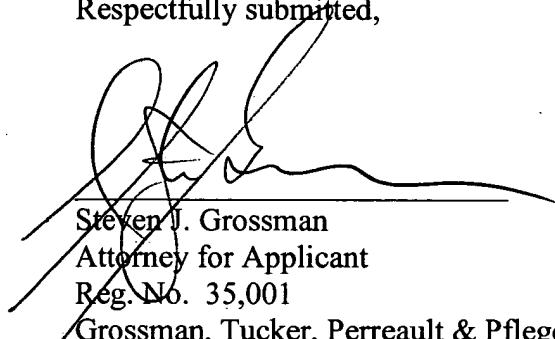
In the event the Examiner deems personal contact is necessary, please contact the undersigned attorney at (603) 668-6560.

In the event there are any fee deficiencies or additional fees are payable, please

Appln. No. 10/089,558
Amndt. dated March 17, 2004
Reply to Office Action of December 18, 2003

charge them (or credit any overpayment) to our Deposit Account No. 50-2121.

Respectfully submitted,



Steven J. Grossman
Attorney for Applicant
Reg. No. 35,001
Grossman, Tucker, Perreault & Pflieger, PLLC
55 South Commercial Street
Manchester, New Hampshire 03101
Tel.: (603) 668-6560
Fax: (603) 668-2970

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service First Class Mail in an envelope addressed to: Mail Stop Non-Fee Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on March 17, 2004, 2003, at Manchester, New Hampshire.

By Carol McClelland
Carol McClelland